

ABSTRACT

A high energy propellant, comprising an oxetane thermoplastic elastomer energetic binder admixed with a high energy explosive filler. The oxetane thermoplastic elastomer energetic binder preferably comprises from about five percent to about thirty percent by weight and the high energy explosive filler comprises from about seventy percent to about ninety-five percent by weight of the composition. A preferred propellant further includes an explosive plasticizer, preferably in an amount of about four percent to about seven percent of the plasticizer by weight of the propellant. The preferred filler is selected from the group consisting of CL-20, TNAZ, RDX and mixtures thereof. The preferred plasticizer is selected from the group consisting of TNAZ, BTTN, TMETN, TEGDN, BDNPA/F, methyl NENA, ethyl NENA and mixtures thereof. In a preferred embodiment, the propellant is actually a pair of high energy propellants comprising a mixture of first and second high energy propellants with the first propellant having a burning rate at least two times faster than the burning rate of the second propellant. The first propellant includes an oxetane thermoplastic elastomer energetic binder admixed with CL-20 high energy explosive filler. The second propellant including an oxetane thermoplastic elastomer energetic binder admixed with RDX high energy explosive filler. Plasticizers and relative amounts for each of the first and second propellants are the same as for the single propellant.